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(56) Documents Cited

GB 2266045 A US 5079013 A US 4865207 A
US 4388996 A

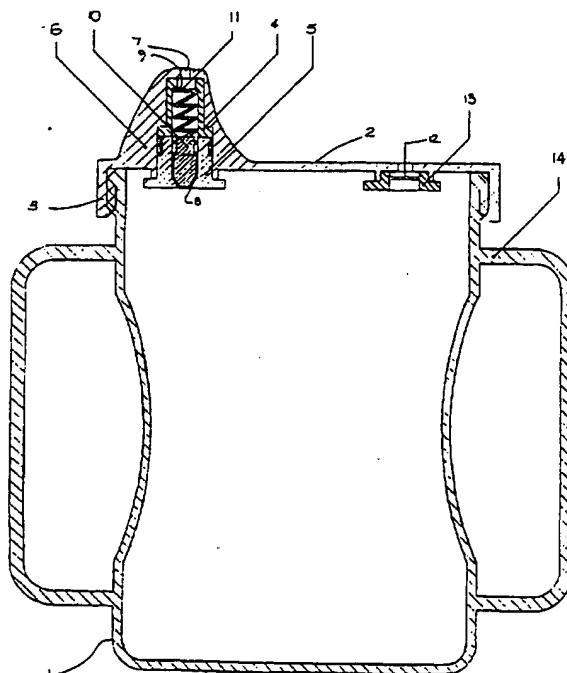
(58) Field of Search

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(54) Drinking vessel

(57) A drinking vessel 1, especially for use as an infant's training cup, has a lid 2 including a dispensing spout 6 with a valve 10, and a gas permeable membrane 12 through which air can enter the vessel. In the preferred embodiment, the valve is one-way and has a resiliently biased valve member 10 and a two part housing 4,5 which can be removed from a recess within the spout and disassembled for cleaning or replacement. The gas permeable membrane may have a snap-fit or screw-in housing 13 which is removable from the lid and may be connected to the valve housing. The vessel may have a weighted, curved bottom for self-righting.

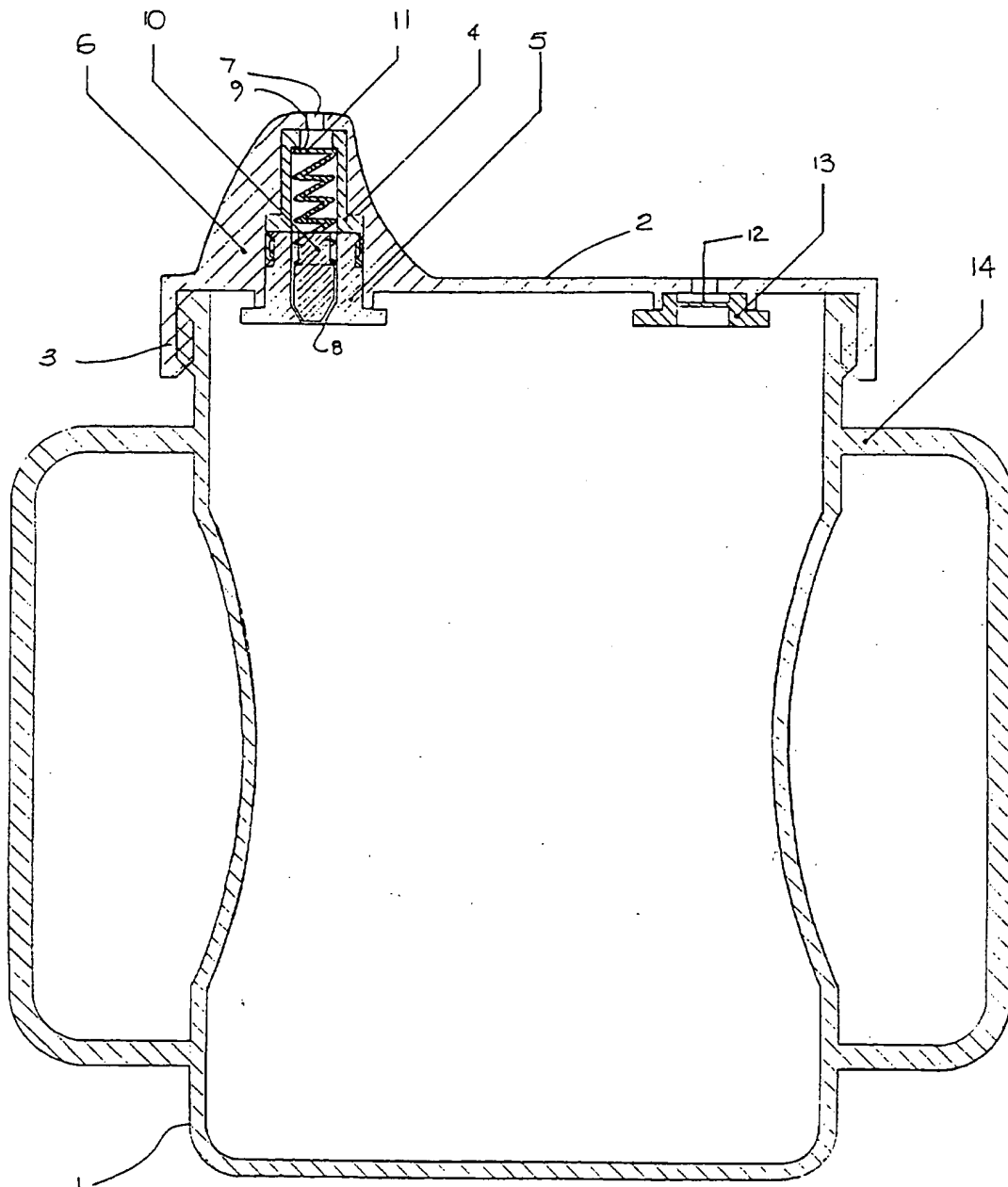
Figure 1.



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Figure 1.



DRINKING VESSEL

Trainer cups are well known for use by toddlers when they are being trained to drink from a cup. Known trainer cups comprise a liquid container shaped like a cup, a lid for closing the cup portion, and a drinking spout provided in the lid to allow the liquid to be sipped or sucked out of the container. The lid is removably fitted onto the cup, for example by a screw-on or snap-on fit to allow filling of the cup.

It is usual to additionally provide an air inlet so that as liquid is sipped or sucked from the cup, air enters the cup to equalise the internal and external pressures. This allows a good fluid flow through the spout, and allows the toddler to suck liquid from the cup easily. It is usual to provide a small hole in the lid of the cup. If no air inlet is provided, the toddler will have to suck very hard to dispense the liquid, and this results in the child sucking in a large amount of air which is undesirable.

A problem with trainer cups of this type is that the open spout and air hole mean that inversion or shaking of the cup causes liquid to spill from the cup when the spout is not in the toddler's mouth, and thereby makes a mess.

US-A-5,079,013 and GB-A-2,266,045 both disclose trainer cups which include a valve in the spout which requires positive sucking to remove liquid from the container. This helps prevent unwanted spillage or dripping of liquid from the container. In the case of GB-A-2,266,045, a hole may be provided in the lid of the cup to equalise the pressure inside and outside the cup when liquid is removed, but in both disclosures it is preferred that a one-way valve is provided to allow air into the cup. A problem with trainer cups such as those disclosed in US-A-5,079,013 and GB-A-2,266,045 is the difficulty in cleaning the cups, especially the valves, and this problem is exasperated where two valves are provided. As with all drinking vessels, especially those used by young children,

hygiene is important. It is therefore important that all liquid can be dispensed from the cup, as any liquid which remains may encourage the growth of bacteria. It is also important that the cup can be cleaned easily.

5 Drinking vessels of this type are not limited to use by toddlers, but can be used in any situation where there is difficulty in consuming liquid from a conventional cup, or where there is a risk of a conventional cup being tipped over with the resulting loss of the contents.

10 US-A-4,865,207 discloses a bottle including a teat through which liquid is dispensed. To equalise the pressures inside and outside the bottle as liquid is removed, part of the side wall of the bottle is made of a gas permeable material, allowing air to enter the bottle to
15 replace the liquid removed.

 According to the present invention, a drinking vessel comprises a cup for containing a liquid, a lid for closing the cup, a dispensing spout provided on the lid through which liquid from the cup can be dispensed, a valve
20 provided in the spout, and a gas permeable membrane through which gas can enter the cup to equilibrate the pressure inside and outside the cup as liquid is dispensed.

 With this arrangement, the valve in the spout, which is preferably a one-way valve, helps prevent the unwanted
25 dripping or leakage of liquid when the dispensing spout is not in a user's mouth since a positive pressure is required to dispense the liquid. The pressure required to dispense liquid through the valve is however not too great, thereby allowing the user easily to suck or sip liquid. The gas
30 permeable membrane allows air or other gas to pass into the container to replace the liquid removed, thereby to equalise the interior and exterior pressure, and allow easy dispensing of the liquid by sucking or sipping, but acts as a liquid impermeable barrier and thereby prevents liquid
35 from within the container dripping or leaking through the air inlet. In this way, the liquid can be dispensed easily without unwanted dripping or spillage.

Preferably the valve is recessed within the dispensing spout. In this way, all liquid within the cup can be dispensed through the spout, thereby avoiding waste and avoiding liquid being left in the cup in which bacteria may grow.

The valve preferably comprises a valve housing having an inlet and an outlet, and a valve member resiliently biased to close the inlet. In this case, a pressure difference across the valve member, for example by a consumer sucking the spout of the container, causes the valve member to move against the bias, opening the inlet, and allowing liquid to pass through the valve housing. It is preferred that the valve housing is formed in two parts which are removably connected together, for example by a snap-fit or screw-fit. This allows the valve to be disassembled so that all parts of the valve may be cleaned individually. This means that the container is more hygienic than the prior art valved trainer cups. The resilient bias may be provided by a spring. Preferably, the valve housing is removable from the spout. This is advantageous as it allows the valve to be removed for cleaning and/or replacement.

The gas permeable membrane may be integral with the lid or side wall of the cup, although it is preferably removable to allow for easy cleaning and/or replacement. Where the gas permeable membrane is removable, it may be provided in a screw-in or snap-in housing, or may be connected to the valve where this is removable to allow easy removal of both the valve and the gas permeable membrane as one.

The cup may be formed with a curved bottom which is weighted. In this way, the cup will tend to remain upright when placed on a surface, and this helps prevent liquid from within the cup leaking or dripping.

The present invention will be described in accordance with the accompanying drawing which shows a sectional view of a cup according to the present invention.

Figure 1 shows a cross-sectional view of a vessel according to the present invention. The vessel includes a cup shaped body 1 which, in use, stores liquid to be dispensed. The body 1 is made from a robust plastics material.

The vessel also includes a lid 2 which covers the large open mouth of the body 1. The lid 2 and body 1 of the vessel are joined by a snap-fit connection 3, although this could be replaced by a screw-threaded fitting. The lid 2 is sealed to the body 1 to prevent leakage of the liquid from within the vessel, but is removable for filling and cleaning the vessel.

The lid includes a drinking spout 6 which includes an aperture through which liquid within the vessel may be dispensed. The spout 6 includes a one-way valve.

The one-way valve includes a two-part valve housing 4, 5 which is shaped to fit closely into the drinking spout 6. In this way it is not possible for liquid to seep around the valve housing 4, 5 and be dispensed through the opening 7 of the spout 6. The housing 4, 5 includes a central through hole, with a valve seat 8 at the bottom, and an abutment 9 at the top. A valve member 10 of liquid impervious material is provided in the through hole, and is urged towards the valve seat 8 by a spring 11. The end of the spring 11 remote from the valve member 10 abuts and acts against the abutment 9. In this way, the valve 8 is normally closed, and therefore prevents liquid from within the vessel passing through the aperture 7 of the spout 6. Therefore, if the vessel is tipped or shaken, the liquid remains in the vessel. When a consumer sucks at the spout 6, the pressure resulting from the sucking caused the valve member 10 to lift from the valve seat 8, against the action of the spring 11, allowing liquid to pass through the through the valve, and through the aperture 7 of the spout 6. When the consumer stops sucking, the spring 11 again urges the valve member 10 against the valve seat 8, thereby preventing further dispensing of the liquid.

To allow the equalization of pressure inside the vessel with that outside as liquid is dispensed, a gas permeable membrane 12 is provided in the lid 2. This gas permeable membrane 12 allows air to pass into the vessel 1, but does not allow liquid from within the vessel 1 to leak through it as would be the case for an air hole.

The gas permeable membrane 12 is held by a membrane housing 13 which snaps or screws over a hole in the lid 2 of the vessel 1. This allows the membrane 12 to be removed from the lid 2 of the vessel 1 for ease of cleaning. the gas permeable membrane 12 may be formed integrally with the housing 13, or may be in the form of a separate sheet of material, for example a disk, which is sandwiched between the lid 2 and the housing 13.

The valve housing 4, 5 may be connected to the membrane housing 13 by a connecting bar (not shown) which allows the valve and the gas permeable membrane 12 to be removed from the lid 2 together.

The gas permeable membrane may be formed integrally with the lid 2 or other wall of the vessel 1. This eases manufacture, although it may be less easy to clean.

As shown in Figure 1, the vessel 1 includes two handles 14. One or both of these handles may be omitted if preferred. The bottom of the vessel 1 may be convexly curved, and may include a weighted portion. In this case, if the trainer cup is knocked, it will automatically right itself, thereby further minimising the risk of spillage.

CLAIMS

1. A drinking vessel comprising a cup for containing a liquid, a lid for closing the cup, a dispensing spout provided on the lid through which liquid from the cup can be dispensed, a valve provided in the spout, and a gas permeable membrane through which gas can enter the cup to equilibrate the pressure inside and outside the cup as liquid is dispensed.
5
- 10 2. A drinking vessel according to claim 1, in which the valve is recessed within the dispensing spout.
3. A drinking vessel according to claim 1 or 2, in which the valve is a one-way valve.
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4. A drinking vessel according to any one of the preceding claims, in which the valve comprises a valve housing having an inlet and an outlet, and a valve member resiliently biased to close the inlet.
20
5. A drinking vessel according to claim 4, in which the valve housing which can be removed from the spout.
- 25 6. A drinking vessel according to claim 4 or 5, in which the valve housing is formed in two parts which are removably connected together.
7. A drinking vessel according to any of the preceding claims, in which the gas permeable membrane is removable to allow for easy cleaning and/or replacement.
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8. A drinking vessel according to claim 7, in which the gas permeable membrane is provided in a screw-in or snap-in housing.
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9. A drinking vessel according to claim 7, in which the gas permeable membrane is connected to the valve housing

where this is removable to allow easy removal of both the valve and the gas permeable membrane as one.

10. A drinking vessel according to any one of the
5 preceding claims, in which the cup is formed with a curved bottom which is weighted.

11. A drinking vessel substantially as shown in or described with respect to the accompanying drawings.



Application No: GB 9706194.9
Claims searched: 1-11

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Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:
UK Cl (Ed.O): A4A (ALM, ALN, APE); A5X (X5E, X5X); B8T (TWG)
Int Cl (Ed.6): A47G 19/22; A61J 9/04
Other: Online: WPI

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
Y	GB 2266045 A (HABERMAN) see page 6, line 25 - page 7, line 6	3
Y	US 5079013 (BELANGER) see fig 2	2-5
X,Y	US 4865207 (JOYNER) see column 1, line 63 - column 2, line 23	X:1,7,8 Y:2-5,10
Y	US 4388996 (PANICCI) see fig 1	10

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.